Discovering
Geometry

Correlation of Discovering Geometry 5th Edition to Common Core State Standards

CCSS content is listed under three headings: **Introduced** (I), **Developed** (D), and **Applied** (A). Developed standards are the focus of the lesson, and are being taught in that lesson. Applied standards are those that have been developed previously and are being used to move students forward in the progression of mathematics. Introduced standards are standards that the lesson introduces, laying the groundwork for future development.

Number and Quantity

Standard	*Discovering Geometry*
Quantities	
Reason quantitatively and use units to solve problems.	
N.Q.2 Define appropriate quantities for the purpose of descriptive modeling.	Lesson 2.2: Inductive Reasoning (A)
Vector and Matrix Quantities	
Represent and model with vector quantities.	
N.VM.2 Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.	Coordinate Geometry 2: Coordinate Properties of Transformations (A) Coordinate Geometry 3: Composition of Transformations on the Coordinate Plane (D) Lesson 6.2: Compositions of Reflections (I) Coordinate Geometry 6: Ordered Pair Rules for Compositions of Transformations (I) Lesson 6.3: Congruence Shortcuts by Transformations (I)

Algebra

Standard	*Discovering Geometry*
Creating Equations	
Create equations that describe numbers or relationships.	
A.CED.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Coordinate Geometry 4: Point of Concurrency: Centroid (A) Coordinate Geometry 5: Point of Concurrency: Circumcenter (A) Coordinate Geometry 8: Points of Concurrency: Orthocenter (A)
A.CED.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.	Coordinate Geometry 4: Point of Concurrency: Centroid (A) Coordinate Geometry 5: Point of Concurrency: Circumcenter (A) Coordinate Geometry 8: Points of Concurrency: Orthocenter (A)

Reasoning With Equations and Inequalities	
Understand solving equations as a process of reasoning and explain the reasoning.	
A.REI.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	Lesson 2.4: Deductive Reasoning (A) Coordinate Geometry 4: Point of Concurrency: Centroid (A) Coordinate Geometry 8: Points of Concurrency: Orthocenter (A)
A.REI.6 Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.	Coordinate Geometry 4: Point of Concurrency: Centroid (A) Coordinate Geometry 5: Point of Concurrency: Circumcenter (A) Coordinate Geometry 8: Points of Concurrency: Orthocenter (A)

Functions

Standard	*Discovering Geometry*
Interpreting Functions	
Understand the concept of a function and use function notation.	
F.IF.2 Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	Lesson 2.3: Mathematical Modeling (A)
F.IF.3 Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.	Lesson 2.3: Mathematical Modeling (A)
Building Functions	
Build a function that models a relationship between two quantities.	
F.BF.1a Determine an explicit expression, a recursive process, or steps for calculation from a context.	Lesson 2.3: Mathematical Modeling (A)

Geometry

Standard	*Discovering Geometry*
Congruence	
Experiment with transformations in the plane.	
G.CO.1. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	Lesson 1.1: Building Blocks of Geometry (D) Lesson 1.2: Finding Angles (D) Lesson 1.3: Creating Definitions (D) Lesson 1.4: Polygons (D) Lesson 1.5: Triangles (D) Lesson 1.6: Special Quadrilaterals (D) Lesson 1.7: Circles (D) Lesson 2.1: Visual Reasoning (A) Lesson 3.1: Duplicating Segments and Angles (A) Lesson 3.2: Constructing Perpendicular Bisectors (A) Lesson 3.3: Constructing Perpendiculars to a Line (A) Lesson 3.4: Constructing Angle Bisectors (A) Lesson 3.5: Constructing Parallel Lines (A) Lesson 3.6: Construction Problems (A) Lesson 3.7: Transformations Using Constructions (A) Lesson 3.8: Constructing Points of Concurrency (A) Lesson 3.9: The Centroid (A) Coordinate Geometry 5: Point of Concurrency: Circumcenter (A) Lesson 9.6: Arc Length (D) Lesson 13.1: The Premises of Geometry (A)

G.CO.2. Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).	Lesson 0.2: Line Designs (I) Lesson 0.3: Circle Designs (I) Lesson 0.4: Op Art (I) Lesson 0.5: Knot Designs (I) Lesson 0.6: Islamic Tile Designs (I) Lesson 1.9: Transformations (D) Coordinate Geometry 2: Coordinate Properties of Transformations (D) Lesson 2.3: Mathematical Modeling (D) Coordinate Geometry 3: Compositions of Transformations on the Coordinate Plane (D) Lesson 3.6: Construction Problems (I) Lesson 3.7: Transformations Using Constructions (I) Coordinate Geometry 6: Ordered Pair Rules for Compositions of Transformations (D) Lesson 6.1: Symmetry and Transformations (D) Lesson 6.2: Compositions of Reflections (D) Lesson 6.4: Tessellations Using Only Translations (A) Coordinate Geometry 7: Dilations on the Coordinate Plane (D) Lesson 7.1: Similar Polygons (A) Lesson 8.1: Areas of Triangles and Special Quadrilaterals (D)
G.CO.3. Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.	Lesson 1.4: Polygons (I) Lesson 1.6: Special Quadrilaterals (I) Lesson 1.9: Transformations (I) Coordinate Geometry 2: Coordinate Properties of Transformations (D) Lesson 2.2: Inductive Reasoning (D) Lesson 2.5: Angle Relationships (I) Lesson 3.7: Transformations Using Constructions (I) Lesson 5.3: Kite and Trapezoid Properties (I) Lesson 5.4: Properties of Parallelograms (I) Lesson 5.5: Properties of Special Parallelograms (I) Lesson 6.1: Symmetry and Transformations (D) Lesson 6.4: Tessellations Using Only Translations (A) Lesson 6.5: Tessellations That Use Rotations (D) Lesson 6.6: Tessellations That Use Glide Reflections (D)
G.CO.4. Develop definitions of rotations, reflections and translations in terms of angles, circles, perpendicular lines, parallel lines and line segments.	Lesson 1.5: Triangles (I) Lesson 1.9: Transformations (D) Coordinate Geometry 3: Compositions of Transformations on the Coordinate Plane (D) Lesson 3.1: Duplicating Segments and Angles (I) Lesson 3.3: Constructing Perpendiculars to a Line (I) Lesson 4.1: Triangle Sum Conjecture (I) Coordinate Geometry 6: Ordered Pair Rules for Compositions of Transformations (D) Lesson 6.1: Symmetry and Transformations (A) Lesson 6.2: Compositions of Reflections (D) Lesson 6.3: Congruence Shortcuts by Transformations (A) Lesson 6.4: Tessellations Using Only Translations (A) Lesson 6.5: Tessellations That Use Rotations (D) Lesson 6.6: Tessellations That Use Glide Reflections (D)

G.CO.5. Given a geometric figure and a rotation, reflection or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.	Lesson 0.1 Geometry in Nature and in Art (I) Lesson 0.6: Islamic Tile Designs (I) Lesson 1.2: Finding Angles (I) Lesson 1.3: Creating Definitions (I) Lesson 1.5: Triangles (I) Lesson 1.9: Transformations (D) Coordinate Geometry 2: Coordinate Properties of Transformations (D) Lesson 3.7: Transformations Using Constructions (D) Coordinate Geometry 3: Compositions of Transformations on the Coordinate Plane (D) Coordinate Geometry 6: Ordered Pair Rules for Compositions of Transformations (D) Lesson 6.2: Composition of Reflections (D) Lesson 6.3: Congruence Shortcuts by Transformations (D) Lesson 6.4: Tessellations Using Only Translations (D) Lesson 7.1: Similar Polygons (A) Lesson 8.1: Areas of Triangles and Special Quadrilaterals (D)
Understand congruence in terms of rigid motions.	
G.CO.6. Use geometric descriptions of rigid motions to transform figures and to predict the effect of a rigid motion on a figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.	Lesson 1.1: Building Blocks of Geometry (I) Lesson 1.9: Transformations (I) Coordinate Geometry 2: Coordinate Properties of Transformations (D) Lesson 2.6: Special Angles on Parallel Lines (D) Coordinate Geometry 3: Compositions of Transformations on the Coordinate Plane (D) Lesson 3.7: Transformations Using Constructions (D) Lesson 6.1: Symmetry and Transformations (D) Lesson 6.2: Composition of Reflections (D) Lesson 6.3: Congruence Shortcuts by Transformations (D)
G.CO.7. Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.	Coordinate Geometry 2: Coordinate Properties of Transformations (I) Lesson 4.2: Properties of Isosceles Triangles (I) Lesson 4.5: Are There Other Congruence Shortcuts? (I) Lesson 6.3: Congruence Shortcuts by Transformations (D)
G.CO.8. Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions	Lesson 3.6: Construction Problems (I) Lesson 3.7: Transformations Using Constructions (I) Lesson 4.4: Are There Congruence Shortcuts? (D) Lesson 4.5: Are There Other Congruence Shortcuts? (D) Lesson 4.6: Corresponding Parts of Congruent Triangles (I) Lesson 4.7: Flowchart Thinking (A) Lesson 6.3: Congruence Shortcuts by Transformations (D) Lesson 7.4: Corresponding Parts of Similar Triangles (A)
Prove geometric theorems.	
G.CO.9. Prove theorems about lines and angles. *Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.*	Lesson 2.4: Deductive Reasoning (I) Lesson 2.5: Angle Relationships (D) Lesson 2.6: Special Angles on Parallel Lines (D) Lesson 3.1: Duplicating Segments and Angles (I) Lesson 3.2: Constructing Perpendicular Bisectors (I) Lesson 3.3: Constructing Perpendiculars to a Line (D) Lesson 3.4: Constructing Angle Bisectors (I)

	Lesson 3.5: Constructing Parallel Lines (I) Lesson 3.6: Construction Problems (I) Lesson 3.8: Constructing Points of Concurrency (I) Lesson 5.3: Kite and Trapezoid Properties (A) Lesson 5.7: Properties of Midsegments (D) Lesson 7.5: Proportional Segments Between Parallel Lines (A) Lesson 13.1: The Premises of Geometry (D) Lesson 13.3: Triangle Proofs (D)
G.CO.10. Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.*	Lesson 3.8: Constructing Points of Concurrency (I) Lesson 3.9: The Centroid (D) Lesson 4.1: Triangle Sum Conjecture (D) Lesson 4.2: Properties of Isosceles Triangles (D) Lesson 4.3: Triangle Inequalities (D) Lesson 4.7: Flowchart Thinking (D) Lesson 4.8: Corresponding Parts of Congruent Triangles (D) Lesson 5.1: Polygon Sum Conjecture (D) Lesson 5.2: Exterior Angles of a Polygon (D) Lesson 5.7: Properties of Midsegments (D) Lesson 7.2: Similar Triangles (A) Lesson 7.5: Proportional Segments Between Parallel Lines (A) Lesson 10.2: Two Special Right Triangles (A) Lesson 13.3: Triangle Proofs (D) Lesson 13.4: Quadrilateral Proofs (A) Lesson 13.5: Indirect Proof (D) Lesson 13.6: Circle Proofs (A)
G.CO.11. Prove theorems about parallelograms. *Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other and conversely, rectangle are parallelograms with congruent diagonals.*	Lesson 5.4: Properties of Parallelograms (D) Lesson 5.5: Properties of Special Parallelograms (D) Lesson 5.6: Proving Quadrilateral Properties (D) Lesson 5.7: Properties of Midsegments (A) Coordinate Geometry 11: Coordinate Proof (D) Lesson 13.4: Quadrilateral Proofs (D) Lesson 13.5: Indirect Proof (D)
Make geometric constructions.	
G.CO.12. Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc). *Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.*	Lesson 0.2: Line Designs (D) Lesson 0.3: Circle Designs (D) Lesson 0.4: Op Art (D) Lesson 0.5: Knot Designs (D) Lesson 0.6: Islamic Tile Designs (D) Lesson 1.1: Building Blocks of Geometry (I) Lesson 3.1: Duplicating Segments and Angles (D) Lesson 3.2: Constructing Perpendicular Bisectors (D) Lesson 3.3: Constructing Perpendiculars to a Line (D) Lesson 3.4: Constructing Angle Bisectors (D) Lesson 3.5: Constructing Parallel Lines (D) Lesson 3.6: Construction Problems (D) Lesson 3.7: Transformations Using Constructions (D) Lesson 3.8: Constructing Points of Concurrency (D) Lesson 3.9: The Centroid (D) Lesson 4.1: Triangle Sum Conjecture (A) Lesson 4.2: Properties of Isosceles Triangles (A) Lesson 4.3: Triangle Inequalities (A)

	Lesson 4.4: Are There Congruence Shortcuts? (A) Lesson 4.5: Are There Other Congruence Shortcuts? (A) Lesson 4.6: Corresponding Parts of Congruent Triangles (A) Lesson 4.8: Corresponding Parts of Congruent Triangles (A) Coordinate Geometry 5: Point of Concurrency: Circumcenter (I)
G.CO.13. Construct an equilateral triangle, a square and a regular hexagon inscribed in a circle.	Lesson 0.3: Circle Designs (I) Lesson 0.6: Islamic Tile Designs (I) Lesson 1.7: Circles (I) Lesson 3.8: Constructing Points of Concurrency (D) Lesson 3.9: The Centroid (D) Lesson 11.6 Volume of a Sphere (A)
Similarity, Right Triangles, and Trigonometry	
Understand similarity in terms of similarity transformations.	
G.SRT.1. Verify experimentally the properties of dilations given by a center and a scale factor:	
G.SRT.1a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.	Coordinate Geometry 7: Dilations on the Coordinate Plane (D) Lesson 7.1: Similar Polygons (D)
G.SRT.1b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.	Coordinate Geometry 7: Dilations on the Coordinate Plane (D) Lesson 7.1: Similar Polygons (D)
G.SRT.2. Given two figures use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all pairs of angles and the proportionality of all pairs of sides.	Coordinate Geometry 7: Dilations on the Coordinate Plane (D) Lesson 7.1: Similar Polygons (D) Lesson 7.2: Similar Triangles (I) Lesson 7.4: Corresponding Parts of Similar Triangles (I) Lesson 8.6: Area and Similarity (D)
G.SRT.3. Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.	Lesson 7.2: Similar Triangles (D)
Prove theorems involving similarity.	
G.SRT.4. Prove theorems about triangles. *Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean theorem proved using triangle similarity*.	Coordinate Geometry 7: Dilations on the Coordinate Plane (I) Lesson 7.2: Similar Triangles (D) Lesson 7.3: Indirect Measurement with Similar Triangles (A) Lesson 7.4: Corresponding Parts of Similar Triangles (D) Lesson 7.5: Proportional Segments Between Parallel Lines (D) Lesson 10.1: The Pythagorean Theorem and Its Converse (D) Lesson 10.2: Two Special Right Triangles (D) Lesson 10.3 Applications of the Pythagorean Theorem (A) Lesson 13.7: Similarity Proofs (D)
G.SRT.5. Use triangle congruence and similarity criteria to solve problems and to prove relationships in geometric figures.	Lesson 3.2: Constructing Perpendicular Bisectors (I) Lesson 4.4: Are There Congruence Shortcuts? (D) Lesson 4.5: Are There Other Congruence Shortcuts? (D) Lesson 4.6: Corresponding Parts of Congruent Triangles (D) Lesson 4.7: Flowchart Thinking (D) Lesson 4.8: Corresponding Parts of Congruent Triangles (D) Lesson 7.1: Similar Polygons (D) Lesson 7.2: Similar Triangles (D) Lesson 7.3: Indirect Measurement with Similar Triangles (D) Lesson 7.4: Corresponding Parts of Similar Triangles (D) Lesson 7.5: Proportional Segments Between Parallel Lines (D) Lesson 8.6: Area and Similarity (D) Lesson 11.8: Similarity and Volume (A) Lesson 13.3: Triangle Proofs (D) Lesson 13.7: Similarity Proofs (A)

Define trigonometric ratios and solve problems involving right triangles.	
G.SRT.6. Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.	Lesson 7.3: Indirect Measurement with Similar Triangles (I) Lesson 12.1: Trigonometric Ratios (D)
G.SRT.7. Explain and use the relationship between the sine and cosine of complementary angles.	Lesson 4.4: Are There Congruence Shortcuts? (I) Lesson 12.1: Trigonometric Ratios (D)
G.SRT.8. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.	Lesson 12.1: Trigonometric Ratios (D) Lesson 12.2: Problem Solving with Right Triangles (D)
(+) Apply trigonometry to general triangles.	
G.SRT.9 (+). Derive the formula $A = \frac{1}{2} ab \sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.	Lesson 12.3: The Law of Sines (D)
G.SRT.10 (+). Prove the Laws of Sines and Cosines and use them to solve problems.	Lesson 12.3: The Law of Sines (D) Lesson 12.4: The Law of Cosines (D)
G.SRT.11 (+). Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).	Lesson 12.3: The Law of Sines (D) Lesson 12.4: The Law of Cosines (D) Lesson 12.5: Problem Solving with Trigonometry (D)
Circles	
Understand and apply theorems about circles.	
G.C.1. Prove that all circles are similar.	Coordinate Geometry 7: Dilations on the Coordinate Plane (I) Lesson 7.1: Similar Polygons (I)
G.C.2. Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*	Lesson 1.7: Circles (D) Lesson 9.1: Tangent Properties (D) Lesson 9.2: Chord Properties (D) Lesson 9.3: Arcs and Angles (D) Lesson 9.4: Proving Circle Conjectures (A) Lesson 10.4: Applications of the Pythagorean Theorem (A) Lesson 13.5: Indirect Proof (D) Lesson 13.6: Circle Proofs (A)
G.C.3. Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.	Lesson 1.7: Circles (I) Lesson 3.8: Constructing Points of Concurrency (D) Lesson 3.9: The Centroid (I) Lesson 8.3: Areas of Circles and Regular Polygons (D) Lesson 9.3: Arcs and Angles (D) Lesson 13.6: Circle Proofs (D)
G.C.4. (+) Construct a tangent line from a point outside a given circle to the circle.	Lesson 1.7: Circles (I) Lesson 9.1: Tangent Properties (D) Lesson 9.2 Chord Properties (D)
Find arc lengths and areas of sectors of circles.	
G.C.5. Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.	Lesson 8.4: Areas of Sectors (D) Lesson 9.6: Arc Length (D)
Expressing Geometric Properties with Equations	
Translate between the geometric description and the equation for a conic section.	
G.GPE.1. Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.	Coordinate Geometry 10: Circles in Coordinate Geometry (D) Lesson 10.4: Applications of the Pythagorean Theorem (A)

G.GPE.2. Derive the equation of a parabola given a focus and directrix.	Covered in *Discovering Advanced Algebra*
G.GPE. 3. (+) Derive the equations of ellipses and hyperbolas given the foci using the fact that the sum or difference of distances from the foci is constant.	Covered in *Discovering Advanced Algebra*
Use coordinates to prove simple geometric theorems algebraically.	
G.GPE.4. Use coordinates to prove simple geometric theorems algebraically. *For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1, √3) lies on the circle centered at the origin and containing the point (0, 2).*	Coordinate Geometry 1: The Midpoint (I) Coordinate Geometry 4: Point of Concurrency: Centroid (D) Coordinate Geometry 5: Point of Concurrency: Circumcenter (D) Coordinate Geometry 8: Points of Concurrency: Orthocenter (D) Coordinate Geometry 9: Distance in Coordinate Geometry (D) Coordinate Geometry 10: Circles in Coordinate Geometry (D) Coordinate Geometry 11: Coordinate Proof (D)
G.GPE.5. Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).	Coordinate Geometry 5: Point of Concurrency: Circumcenter (D) Coordinate Geometry 11: Coordinate Proof (D)
G.GPE.6. Find the point on a directed line segment between two given points that partitions the segment in a given ratio.	Coordinate Geometry 1: The Midpoint (D) Lesson 7.5: Proportional Segments Between Parallel Lines (I)
G.GPE.7. Use coordinates to compute perimeters of polygons and areas for triangles and rectangles, e.g. using the distance formula.	Lesson 8.1: Areas of Triangles and Special Quadrilaterals (I) Lesson 8.2: Applications of Area (I) Coordinate Geometry 9: Distance in Coordinate Geometry (D)
Geometric Measurement and Dimension	
Explain volume formulas and use them to solve problems.	
G.GMD.1. Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. *Use dissection arguments, Cavalieri's principle, and informal limit arguments.*	Lesson 8.3: Areas of Circles and Regular Polygons (D) Lesson 9.4: Proving Circle Conjectures (D) Lesson 9.5: The Circumference/Diameter Ratio (D) Lesson 11.1: The Geometry of Solids (I) Lesson 11.2: Volume of Prisms and Cylinders (D) Lesson 11.3: Volume of Pyramids and Cones (D) Lesson 11.7: Surface Area of a Sphere (D)
G.GMD.2. (+) Given an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.	Lesson 11.1: The Geometry of Solids (I) Lesson 11.6 Volume of a Sphere (D)
G.GMD.3. Use volume formulas for cylinders, pyramids, cones and spheres to solve problems.	Lesson 11.1: The Geometry of Solids (I) Lesson 11.2: Volume of Prisms and Cylinders (D) Lesson 11.3: Volume of Pyramids and Cones (D) Lesson 11.4: Applications of Volume (A) Lesson 11.5: Displacement and Density (A) Lesson 11.6: Volume of a Sphere (D) Lesson 11.8: Similarity and Volume (D)
Visualize relationships between two-dimensional and three-dimensional objects.	
G.GMD.4. Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.	Lesson 1.8: Space Geometry (I) Lesson 2.1: Visual Reasoning (D) Lesson 2.2: Inductive Reasoning (D) Lesson 11.1: The Geometry of Solids (D) Lesson 11.2: Volume of Prisms and Cylinders (D)

Modeling with Geometry	
Apply geometric concepts in modeling situations.	
G.MG.1. Use geometric shapes, their measures and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).	Opportunities for geometric modeling occur throughout the curriculum. Lesson 1.8: Space Geometry *(D) Lesson 8.5: Surface Area (D) Lesson 11.1: The Geometry of Solids (D) Lesson 11.2: Volume of Prisms and Cylinders (A) Lesson 11.3: Volume of Pyramids and Cones (D) Lesson 11.4: Applications of Volume (A) Lesson 11.5: Displacement and Density (A) Lesson 11.7: Surface Area of a Sphere (D)
G.MG.2. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).	Lesson 11.5: Displacement and Density (D)
G.MG.3. Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy constraints or minimize cost; working with typographic grid systems based on ratios).	Opportunities for geometric modeling occur throughout the curriculum.